

We'll expand about the first row since there are no zeros to exploit,

$$\begin{vmatrix} -2 & 3 & -2 \\ -4 & -2 & 1 \\ 2 & 4 & 2 \end{vmatrix} = (-2) \begin{vmatrix} -2 & 1 \\ 4 & 2 \end{vmatrix} + (-1)(3) \begin{vmatrix} -4 & 1 \\ 2 & 2 \end{vmatrix} + (-2) \begin{vmatrix} -4 & -2 \\ 2 & 4 \end{vmatrix}$$

$$= (-2) ((-2) (2) - 1 (4)) + (-3) ((-4) (2) - 1 (2)) + (-2)((-4) (4) - (-2) (2))$$

$$= (-2) (-8) + (-3) (-10) + (-2) (-12) = 70$$

Nosotros hallaremos el determinante a través de la primera fila siempre que no hayan ceros que podamos aprovechar,

$$\begin{vmatrix} -2 & 3 & -2 \\ -4 & -2 & 1 \\ 2 & 4 & 2 \end{vmatrix} = (-2) \begin{vmatrix} -2 & 1 \\ 4 & 2 \end{vmatrix} + (-1)(3) \begin{vmatrix} -4 & 1 \\ 2 & 2 \end{vmatrix} + (-2) \begin{vmatrix} -4 & -2 \\ 2 & 4 \end{vmatrix}$$

$$= (-2) ((-2) (2) - 1 (4)) + (-3) ((-4) (2) - 1 (2)) + (-2)((-4) (4) - (-2) (2))$$

$$= (-2) (-8) + (-3) (-10) + (-2) (-12) = 70$$

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